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EFFECT OF EDUCATIONAL INTERVENTION ON PRESSURE ULCER DOCUMENTATION AMONG NURSES IN JORDAN MINISTRY OF HEALTH TERTIARY HOSPITALS: A QUASI-EXPERIMENTAL RESEARCH APPROACH

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ABSTRACT

Background: Pressure ulcers (PUs) are areas of localised tissue destruction that occur as a soft tissue gets compressed over a bony prominence and an external skin surface for a prolonged period of time. Treatment of ulcers of the sort represents a major financial burden for most health care systems worldwide as well as in Jordan and Arab world. **Objective:** the aim of this study is to develop, implement and evaluate the effect of intervention educational on nursing quality of documentation regarding pressure ulcer in Jordanian ministry of health tertiary hospitals. **Methods/design:** A quasi experimental study design will be conducted in Jordan in which 54 nurses will be placed in each of two groups, a control and an intervention group. Nurses will be selected to represent the following four wards: (1) the surgical ward, (2) the medical ward, (3) the intensive care unit and (4) the orthopaedic ward. Sampling will consider the number of nurses in each of those wards. Stratification and a simple random sampling technique will be used to sample 54 nurses in each group. Pre- and post-intervention assessments will be conducted to evaluate two parameters with respect to: (1) knowledge, skills, motivation and (2) quality of nursing documentation. The quality of documentation regarding pressure ulcer will be determined by examining two documents for each participant every time using the nursing documentation Chart Audit Tool. One-way multivariate analysis of variance and 2-way repeated multivariate analysis of variance will be used to analyze the data. **Discussion:** To the best of our knowledge, this research will be the first quasi experimental time series study with control group using a lectures educational intervention for nurses to examine the quality of nursing documentation on pressure ulcer, knowledge, skills, and motivation regarding nurses.

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INTRODUCTION

Pressure ulcers are areas of localized tissue destruction produced by the compression of soft tissue over a bony prominence and an external skin surface for a prolonged period of time (NPUAP, 2007). Pressure ulcers are significant and economic problems in most health care settings worldwide (Turnipseed & Landefeld, 2017). Also, pressure ulcers remain the main complication of increase patient's length of stay in hospital, increase cost of hospitalization, increase patient morbidity and mortality, and play a significant role in the spread of infection in the clinical area (Anthony *et al.,* 2004; Holm *et al.,* 2007). Additionally it causes significant pain, alteration in life satisfaction (Gorecki *et al.,* 2009).

Pressure ulcers have been reported as the common and serious problem in the healthcare settings in Jordan as well as the Arab World, pressure ulcers pose a significant health problem among hospitalized patients (Tubaishat *et al.,* 2011; Saleh *et al.,* 2009). The prevalence rate of PU in Jordan was 12% in 2011 and has increased to 17% in 2015, thus more emphasis is required to raise the level of awareness among nurses regarding PU (Tubaishat *et al.,* 2011; Qaddumi & Khawaldeh, 2014; Tubaishat, *et al.,* 2015).

As the care provider is the main part of the health sector and as patient safety is an important issue in nursing care; there is a need to develop more knowledge about pressure ulcer (Orazio & Margaret, 2010). The pressure ulcer can cause harm and even direct cause of death in 7%-8% of all paraplegics. Patients hospitalized with acute illness have an incidence rate of pressure ulcers of 3%-11%, which could be avoided if inadequate actions had been taken (De Meester *et al.,* 2013). It was noticed that nurses in all areas of the care settings lacked the current evidence-based knowledge with regard to pressure ulcer. Also, nursing knowledge and the ability to prevent pressures ulcers have become priority issue in care facilities (Thomas, 2012). It is critical for nurses to have the knowledge to correctly assess the pressure ulcers during their regular skin checks and document all elements of wounds (Lyder & Ayello, 2009).

Knowledge levels of those registered nurse staff related to the proper management of risk factors tools for detection, patient centered interventions, and treatment plans that involve staff and family members were found to be far superior to those in acute care settings (ZulkowskiK & AyelloEA., 2005). Increasing the knowledge of nurses and comprehensive documentation lead to reduce pressure ulcer-related complications and improve preventative strategies which has become important for health care organizations (Smith & Waugh, 2009). In addition, it enhances patient's outcomes in terms of reducing hospital stay, pain and human suffering (Smith & Waugh, 2009).

The purpose of documentation to record, communicate and support the flow of information in the patient record was. Moreover the patient records lacked accuracy, completeness and comprehensiveness, which can jeopardise patient safety, continuity and quality of care (Thoroddsen *et al.,* 2013).

Accuracy of nursing documentation was defined as the correspondence between documentation and existing pressure ulcers, categories and location of pressure ulcers (Gunningberg *et al.,* 2009). Accurate assessment must be followed by accurate documentation. Documentation of pressure ulcer requires daily or more frequent monitoring of pressure ulcer (Fife *et al.,* 2010). Accurate assessment and documentation of skin is an important nursing activity, especially the identification and documentation of wounds

which can be a difficult task (Ruggiero, 2015). Nurses should properly identify pressure ulcers and document all elements (aetiology, size, exudates, tissue type, per wounds, treatment used, pain addressed, offloading devices used and direction of healing) of the ulcer to monitor and track its progress (Stevens & Milne, 2007). Also, a clear description of a pressure ulcer should include site, dimensions, condition of the ulcer margin and surrounding skin, wound appearance, odor, and correct staging (Whiteing & Nl, 2009). In addition to the depth of the lesion, the presence of granulation tissue, fibrin debris and necrosis (Bergquist-Beringer *et al.,* 2011).

It has been shown that nursing documentation in an accurate level is an essential element of nursing care that ensures patient's safety (Stevens & Milne, 2007). It is important to assess a patient's skin and the risk for developing pressure ulcers on admission to an acute care setting as they are automatically at an increased risk for developing pressure ulcers (Youn *et al.,* 2012). The ability of the average non-expert clinician to correctly stage pressure ulcers is poor, the rate rages from 23% to 58% (Young *et al.,* 2012). However, wounds are often inadequately documented (Bergquist-Beringer *et al.,* 2011).

Completeness was defined as the presence of risk factors in the patient record (Gunningberg *et al.,* 2009). Increased ability to identify risk factors and high-risk groups, development of skin assessments with staging algorithms, and an emphasis on documentation have result in a paradigm shift toward measuring nurses' knowledge, and whether or not this knowledge is translated into practice (Orazio & Margaret, 2010).

Comprehensiveness was defined as whether a patient record included elements needed for identification of a pressure ulcer or its risk factors and a plan of care to resolve or prevent a pressure ulcer in accordance with phases of the nursing process (Gunningberg *et al.,* 2009).

Several studies have shown serious shortcomings in the documentation of nursing care in health records (Gunningberg & Ehrenberg, 2004; Idvall E, 2002). For instance, data are often lacking and existing information is not specific enough (Gunningberg & Ehrenberg, 2004). In addition, many studies have shown lack of comprehensiveness in recording, which may impede overview of the care process (Gunningberg & Ehrenberg, 2004). These deficiencies have consequences for the quality and safety in care in that errors could occur and the continuity of care for patients may be hampered (Gunningberg *et al.,* 2009).

Documentation is the responsibility of all registered nurses (RNs) to document clearly and comprehensively (Whiteing, 2009). Legally, what is not documented was not done (Fife *et al.,* 2010). Accurate wound documentation is necessary for legal purposes not only in the present time, but in potential future litigation (Fife *et al.,* 2010). Yet, nurses and other professionals are challenged to conduct accurate assessment and documentation.

1.1 Study Objectives

The aim of this study is to develop, implement and evaluate the effect of intervention educational on nursing quality of documentation regarding pressure ulcer in Jordanian ministry of health tertiary hospitals.

METHODOLOGY

2.1 Study Design

The study design is a pre-post time series quasi-experimental design with control group. Quasi experimental design was selected due to a limitation pertaining to the number of hospitals that satisfy our premise inclusion criteria. In addition its difficult to preform randomization on individual level within same group to avoid contamination, the study will be conducted in Jordan, there are only two eligible hospitals selected as intervention and control lead to quasi experimental being the most suitable study design that can be applied in the current study (Harris *et al.,* 2006). They are quite similar in bed capacity, specialties and manpower, health services provided. The participants will be recruited from study hospitals that are eligible for the study based on inclusion and exclusion criteria. The participants in the intervention and control group will be selected randomly using stratification random sampling, and then simple random sampling will be used to select the participants from each stratum.

2.2 Study Flow

As shown in Figure 1 Field work will be undertaken in two tertiary hospitals. The participants in the intervention and control group will be selected randomly using stratification random sampling, and then simple random sampling will be used to select the participants from each stratum. Socio-demographic characteristics will be determined in all participating nurses, in addition to the numbers of years of experience, training, the level of qualification and the type of ward in which nursing duty is primarily performed. The level of knowledge, skills, and motivation of the sampled nurses will be assessed using questionnaire, which will be handed out to the participants at baseline. Thereafter, the intervention will be administered in the intervention group. No educational effort will be done in the control group. After one month from the start of the intervention, the questionnaire will be distributed again in both groups to measure the intervention's immediate effect. Six months later, the same procedure will be repeated. The researchers will review samples of PU documents to assess the quality of nursing documentation in both groups. Simple random sampling will be used to select the documents from each participants included in the study. A chart audit tool will be used to assess the quality of nursing documentation for each participant. Will be reviewed at baseline, 1 and 6 months after the intervention. The study will take place for a period of twelve months including the pilot and main study. Figure 1 shows the study flow chart.

2.3 Inclusion and Exclusion Criteria

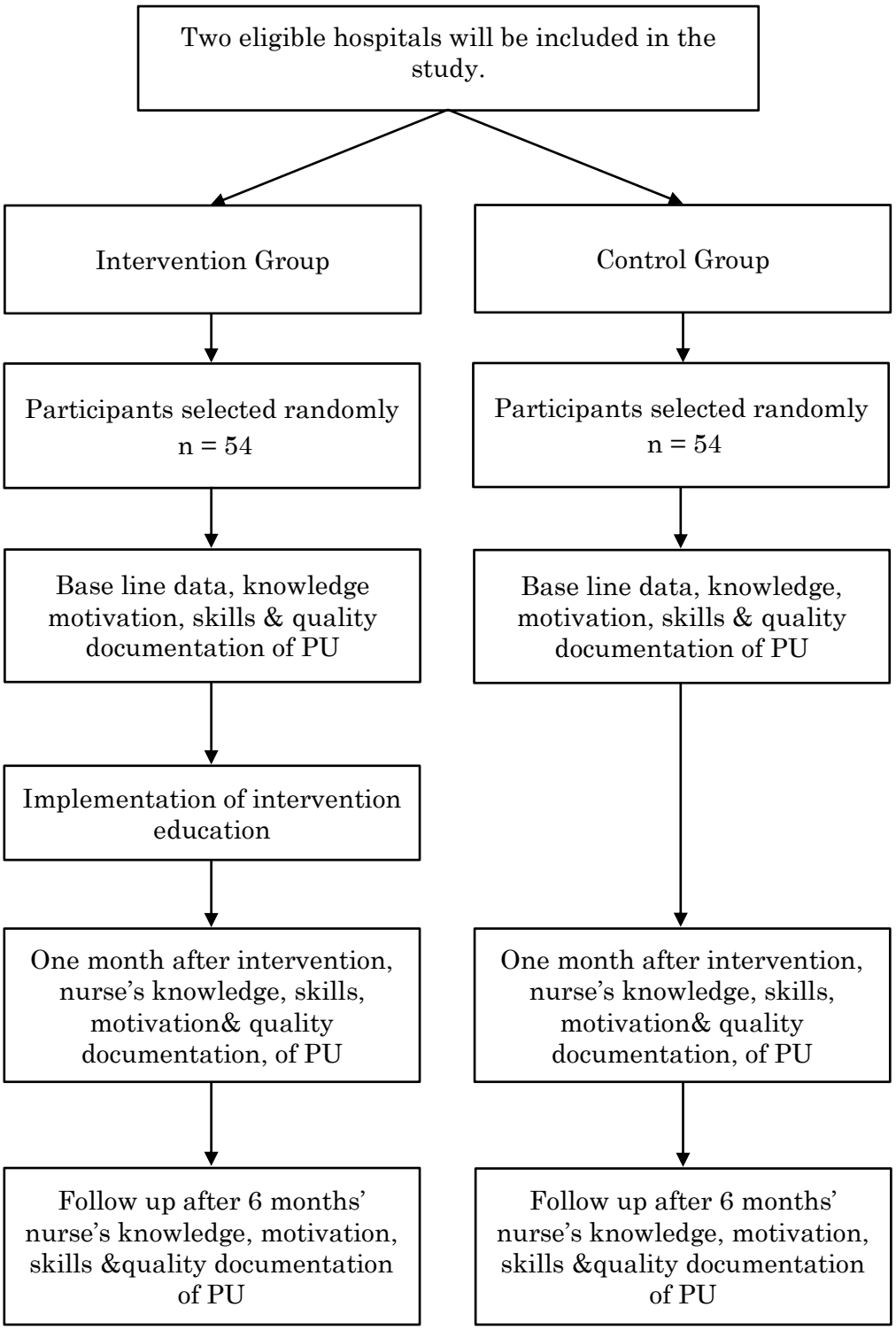
The study includes the registered nurse (RN). And the nurse how providing direct patient care in the wards surgical, medical, orthopaedic, and intensive care unit. Being a head nurse, a nurses' clerk or a licensed practice nurse (LPN) and Being an outpatient nurse will be excluded.

2.4 Sampling Methods

Proportional stratified random sampling will be used. Samples of nurses will be selected to represent four wards in every hospital: the intensive care unit, and the medical,

surgical and orthopaedic wards. A satisfactory number of nurses will depend upon the number of nurses in each of those wards. Therefore, four strata will be created in both the intervention and the control groups. In each stratum, the nurses will be selected by a simple random-sampling technique. A software number-generator will be used to select a random number of nurses per stratum. Documents will be selected using a simple random-sampling technique.

Figure – 1: *The Study Flow Chart*



2.5 Matching

Every one of participant in intervention group will be matched from control group. The matching will be based on the variables gender, experience, education level, training, and the type of ward. This technique will help in making the intervention and control groups comparable and parallel in terms of confounder distribution.

2.6 Sample Size

2.6.1 Nurses Sample Size

The sample size for secondary outcome will be calculated in a manner that allows each hypothesis to be tested in two population means formula by Lemeshow, Hosmer, Klar, Lwanga, & WHO (1990). The sample size for nurse based on a previous intervention study (Thomas *et al.,* 2012). to estimate the sample size of nurses in each group.

$$\boldsymbol{n = \frac{2\sigma^2\left[\left(Z1-\frac{\alpha}{2}\right)+(Z1-\beta)\right]^2}{(\mu 1-\mu 2)^2}} \qquad \boldsymbol{n = \frac{2 * 14.59^2[1.96+1.28]^2}{(63.20-73.80)^2}} \qquad \boldsymbol{n = 43}$$ For each group

where, n: Sample size, **σ:** Pooled standard deviation (assumed to be 14.59), **μ1-μ2:** The total mean of nursing knowledge (calculated as 10.6), **β:** A factor of the desired power: If the desired power is 90%, Two tailed estimation makes **Z1-α/2 =** 1.96, and **Z1-β =** 1.28. As shown above, the researcher set the level of significant at 5% (**α =** 0.05) and CI at 95%. If pooled σ is 14.59, the sample size should be 43 nurses per group. Assuming a 20% drop-out margin, the following formula would indicate that the total sample should be per group: N (number to enroll) = desired sample size / (% retained) (Sullivan, 2003). **N =** (43/ .80) = 54 for each group.

2.6.2 In term Sample Size to Assess the Quality of Nursing Documentation

The sample size for Primary Outcome will be calculated based on the formula for hypothesis testing of two populations as demonstrated by formula by Lemeshow, Hosmer, Klar, Lwanga, & WHO (1990). The sample size for nurse based on a previous intervention study (Thomas *et al.,* 2012). to estimate the sample size of nursing documentation in each group.

$$\boldsymbol{n = \frac{2\sigma^{2[Z1-\alpha+Z1-\beta]^2}}{(\mu 1-\mu 2)^2}} \quad n = \frac{2 * 56.28^2[1.96+1.28]^2}{(10.2-39.1)^2} \qquad \boldsymbol{n = 80}$$ Documents for each group

Where, n: Sample size, **σ:** Pooled Standard deviation (**σ =** 56.28). **μ1-μ2:** The total mean of nursing documentation (**μ1-μ2 =** 28.9). Two tailed **Z1-α/2 =** 1.96; power 90%, **Z1-β =** 1.28. As shown above, the researcher has set the level of significant at 5% (**α =** 0.05) and CI at 95%.). The sample size should be 80 documents per group. Assuming a 20% drop-out margin, the following formula would indicate that the total sample should be 100 documents per group: N (number to enroll) = desired sample size / % retained (Sullivan, 2003). N = (80 / .80)= 100 for each group.

2.7 Instruments

A questionnaire developed by the researcher based on the information motivation behavioral skills model is one of the instruments that will be used to evaluate the level of

nursing knowledge about documentation, as well as the motivation and skills. It consists of close-ended questions and is divided into 2 sections: demographic data of the nurses and domain of the nurses' knowledge, motivation, and skills. Nurses are expected to spend 15 minutes completing the questionnaire.

Chart audit tool will be used to evaluate quality of nursing documentation. Three data collection forms will be used. The chart audit tool consists of three domains. The first domains are the accuracy of nursing documentation regarding PU it was validated in a previous study, content validity and correlation validity were found to be significant at P values of 0.01 and 0.05, respectively (Thomas, 2012). The second domains are the completeness of nursing documentation regarding PU this instrument was used in a previous study (Gunningberg L & Ehrenberg A, 2004). The third domains are the comprehensive of nursing documentation regarding PU also it was used in a previous study (Ehnfors M & Smedby, 1993; Gunningberg *et al.,* 2009).

In demand to achieve accurate and specific results, the validity and readability of the questionnaire will be evaluated. Face validity will be ensured by an expert currently practicing to ensure the veracity of the meaning, wording, and sequences. Content validity will be ensured by lecturers working in the university to ensure clarity, representation, and comprehensiveness. Furthermore, factor analysis will be conducted to ensure a structural correlation between variables and factors on the instruments. Finally, reliability through the Cronbach coefficient alpha will be conducted to ensure internal consistency.

2.8 Intervention

Piloted intervention will be used in this study. The intervention educational material was developed based on the information motivation behavioral skills model. This model has 3 constructs: information, motivation, skills, and behavioral change. The intervention component comprises 4 sections. The first section touches on the background of the quality of nursing documentation accuracy completeness comprehensive and knowledge on pressure ulcer. The second section encompasses the motivation issue and the importance documentation. The third section includes important skills that should be performed by nurses to increase the quality of nursing documentation. Furthermore, the intervention will also integrate the following concepts into the administered intervention: aetiology, epidemiology, development, classification, observation, nutrition, skin assessment, risk assessment, signs/symptoms, extrinsic/intrinsic factors, prevention and strategies to reduce pressure and shear. Those concepts will also help evaluate key nursing documentation quality items e.g., location, size, length, width, depth, and exudated, etc. The intervention educational will take place in a hall dedicated to lectures in the hospital. The researcher will use a variety of teaching aids, including PowerPoint presentations, group discussions, videos, simulation, and printed materials. Also a researcher will be an opportunity for questions and answers for nurse's participants in study at the end of each educational session.

2.9 Outcome Measure

2.9.1 Primary Outcome

The primary outcome of this research is the quality of nursing documentation. It is the change of the behavior based on the information motivation behavioral skills model.

2.9.2 Secondary Outcome

The secondary outcome in this study is knowledge, motivation, and skills of nurses. Based on the information motivation behavioral skills model, there are direct and indirect correlations between knowledge and behavioral change. There are also direct and indirect correlations between motivation and behavior change. Meanwhile, behavioral skills have a direct correlation with behavioral change.

2.10 Statistical Analysis

Data analysis in this study is divided into 2 parts: descriptive and inferential. Descriptive data will be calculated in order to compute the central tendency and dispersion to add valuable statistical information to the study. Inferential data analysis will be used to meet a specific objective. Chi-square, 1-way multivariate analysis of variance, 2-way repeated measure multivariate analysis of variance, and multivariate analysis of covariance are the statistical methods that will be used to test the hypothesis. Cochran Q test will be also employed to assess the difference in proportion. The level of significance will be set at α=0.05, and all testing of hypotheses will be conducted using 2-sided tailed hypotheses. The statistical program used is SPSS version 22 (IBM Corp).

RESULT

At baseline assessments researcher expect no difference between the control and the intervention group in terms related knowledge, motivation, skills and quality of nursing documentation before intervention are statistically not significant (P>.05). Following the intervention, however, a statistically significant difference will be detected between the two groups. But we do not expect the quality of nursing documentation, knowledge, motivation, and skills to change in the control group (P>.05). It is expected that the intervention will be effective to change the behavior and improve the quality of nursing documentation (P<.05).

DISCUSSION

This study aims to investigate the effect of intervention education on knowledge, skills, motivation and the quality of nursing documentation on pressure ulcer among nurses.

The current research will implement an educational intervention to improve Jordanian nurses' knowledge, skills, motivation and quality of nursing documentation regarding patient with PU. The intervention is proposed educational intervention is an attempt to help staff nurses, nursing managers, policy makers, educators and researchers manage PU across the country. The intervention education is believed to be able to add to the existing preventative strategies and reduce PU exacerbation probability. Improve the quality of nursing documentation , healing time, hospitalization costs and, most importantly, will improve patients' overall quality of life (Thomas, 2012). In addition, implementing an educational program that focuses to enhance the quality of nursing documentation has been highly recommended (Qaddumi & Khawaldeh, 2014).

This study seems to be desperately warranted. To the best of our knowledge, the proposed work will be the first that combines 4 outcome variables—knowledge, motivation, skills, and the quality of nursing documentation and aims to investigate the effect of intervention education on knowledge, skills, motivation and the quality of nursing documentation on pressure ulcer among nurses.

The intervention educational will take place in a hall dedicated to lectures in the hospital. The researcher will use a variety of teaching aids, including PowerPoint presentations, group discussions, videos, simulation, and printed materials. The intervention education of that will be given by specialist of tissue viability.

The main limitation of this study has to do with the research design is a pre-post time series quasi-experimental design with control group which does not allow complete randomization when assigning subjects to groups. This can constitute a threat to internal validity mostly reduce the inference of causality related to lack of randomization.

CONCLUSION

To the best of our knowledge, this research will be the first quasi experimental time series study with control group using a lectures educational intervention for nurses to examine the quality of nursing documentation on pressure ulcer, knowledge, skills, and motivation regarding nurses. The result of current study will determine the effectiveness of the educational intervention in manage and improving the quality of nursing documentation, knowledge, skills, and motivation regarding nurses in Jordan. If the intervention education achieves the effectiveness, the intervention education will to help staff nurses, nursing managers, policy makers to manage pressure ulcer problems and improve quality of nursing documentation.

ETHICAL APPROVAL

In order to conduct this study an ethical approval has been obtained from JKEUPM ethical committee with reference number FPSK (EXP16) P171. In additional to that, Ministry of Health in Jordan ethical approval has been obtained as well because the study is planned to be conducted in Jordan MOH hospitals, reference number RECI (170052).

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CONFLICT OF INTEREST

The researchers have no conflict of interest for declaration.

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